LEYTES, Yu.S.

Some problems in the blocking of marine hydraulic reverse gears.
Sbor.trud.Lab.gidr.mash. no.9:13-26 '61. (MIRA 15:3)
(Marine engines--Hydraulic drive)

LEYTES, Yu.S.

Selecting geometrical parameters for hydraulic torque converters. Sbor.trud.Lab.gidr.mash.AN URSR no.10:132-145 '62. (MIRA 15:12)
(Oil-hydraulic machinery)

ACC NR: AT7000719 SOURCE CODE: UR/0000/66/000/000/0130/0143

AUTHOR: Leytes, Yu. S. (Engineer)

ORG: None.

TITLE: Experimental investigation of the velocity field in a hydraulic coupling with centrifugal turbine wheel and radial-axial reactor

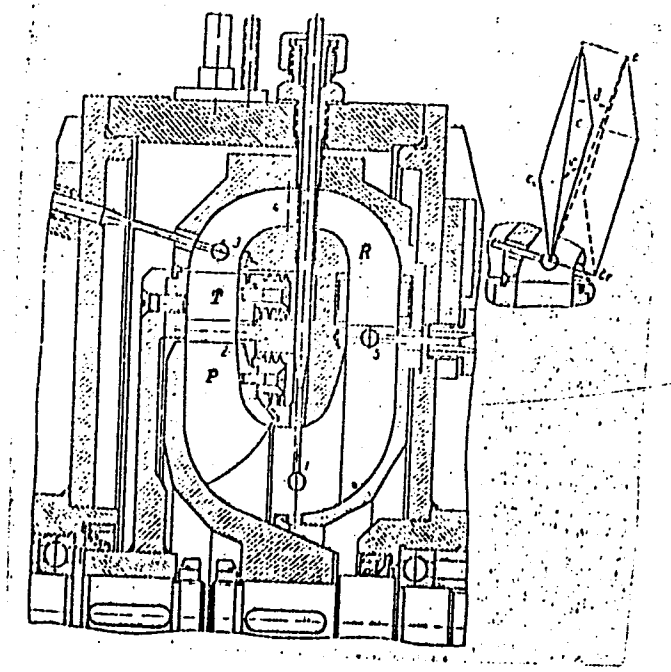
SOURCE: Ukraine. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya. Gidroprivod i gidropnevmoavtomatika (Hydraulic drive and hydropneumatic automation), no. 2. Kiev, Izd-vo Tekhnika, 1966, 130-143

TOPIC TAGS: hydraulic device, mechanical power transmission device, flow analysis

ABSTRACT: Experimental data are given on the velocities of fluid flow in the interwheel clearances of a single-stage hydraulic coupling with centrifugal turbine wheel and radial-axial reactor. The hydraulic coupling is shown in the figure. The numerals indicate the points at which measurements were taken, *P* is the pump impeller, *T* is the turbine wheel and *R* is the reactor. The angles of all blade rims are constant with respect to width. Tests using transformer oil at a temperature of 80°C and a pump vlocity of 1500 rpm showed a maximum efficiency of 0.83 at a transmission ratio of 0.61. The starting conversion factor is 3.65. Spherical probes 5 mm in diameter with 0.7 mm channels were used for measurements at transmission ratios of 0, 0.3, 0.54, 0.61, 0.8 and 1.0. The experimental data for each of the five cross sec-

Card 1/3

ACC NR: AT7000719



Card 2/3

ACC NR: AT7000719

tions are considered separately. The results show a complex interwheel flow structure in the hydraulic coupling. Tests under rated operating conditions show an approximately uniform distribution of the meridian components of velocity after outlet from the turbine wheel and reactor, and before inlet into the reactor. The distribution of these velocity components is potential before inlet into the pump impeller, and antipotential between the impeller and the turbine wheel. The distribution of peripheral velocity components under these same operating conditions is potential before inlet into the pump and close to uniform in the remaining cross sections. Under severe operating conditions, the curves for velocity distribution are distorted with the most noticeable effect observed after outlet from the reactor and before inlet into the pump impeller. Under rated operating conditions, the angles of attack on the outer stream lines of the input edge of the pump impeller are equal to 40°. To reduce losses, the blades of the impeller should be profiled with a variable angle at the inlet to take care of the actual velocity distribution. When the blade angle is held constant, efficiency may be improved by locating the input edge of the pump impeller in the radial section of the working cavity and reducing the width of this edge. Under severe operating conditions, the angles of attack at the inlet to the reactor reach considerable values varying from +66° for a transmission ratio of 0 to -56° when the transmission ratio is 1.0. The range of transmission ratios with high efficiencies may be extended by profiling the reactor blades with increased nose thickness or by using deflectors at the inlet. Orig. art. has: 8 figures, 1 formula.

SUB CODE: 13/ SUBM DATE: 29Jun66/ ORIG REF: 010

Card 3/3

LEYTES, Z. M. and ATLAS, I. Ye.

"Backfilling as Practiced in Kuzbass Coal Mines," Ugol', No 5, 1953.

Translation W-28528, 10 Nov 53

1. ATLAS, I.YE.; LEYTES, Z.M.

2. USSR (600)

4. Coal Mines and Mining

7. Technological and economical indexes of waste-filling operations in wide steep seams of the Kuznets Basin. Engs. I.YE. Atlas, Z.M. Leytes, Ugol' 28 no. 5, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

BURCHAK, Trafim Stepanovich, dotsent, kandidat tekhnicheskikh nauk; LEYTES, Z.M., otvetstvennyy redaktor; RATNIKOVA, A.P., redaktor izdatel'stva; ANDREYEV, G.G., tekhnicheskiy redaktor

[Track management for underground transportation] Putevoe khoziaistvo podzemnogo transporta. Moskva, Ugletekhizdat, 1956. 134 p.(MLRA 9:7)
(Mine railroads)

LEYTES, Z., inzhener; SYSOYEVA, V., inzhener.

Manual of track development and organization of shunting operations.
Mast.ugl. 5 no.6:24-26 Je '56. (MLRA 9:8)
(Donets Basin--Mine railroads)

LEYTES, Zakhar Moiseyevich; SYSOYEVA, Valentina Aleksandrovna; RATNIKOVA, A.P., redaktor izdatel'stva; SABITOV, A., tekhnicheskiy redaktor

[Improving work organization of underground transportation in mines of the Donets Basin] Uluchshenie organizatsii raboty podzemnogo transporta na shakhtakh Donbassa. Moskva, Ugletekhizdat, 1957. 70 p. (MIRA 10:7)
(Donets Basin--Mine haulage)

LEYTES, Z.M., starshiy nauchnyy sotrudnik

Principles and methods of determining the nomrs of increase in track in haulage drifts of mines of the Donets Basin. Vop. rud. transp. no.2:218-249 1957. (MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Donets Basin--Mine railroads)

LEYTES, Z.M., inzhener.

Improving the work safety of underground transport in coal mines.
Bezop. truda v prom. 1 no.2:9-12 F '57. (MIRA 10:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Coal mines and mining--Safety measures)

LEYTES, Z.M.

Development of underground transportation techniques in coal mines during the 40 years of Soviet regime. Ugol' 32 no.12:31-34 D '57. (MIRA 11:1)

(Mine railroads) (Coal handling)

GUDALOV, Vladimir Petrovich, LEYTES, Zakhar Moiseyevich, MALEVICH, Nikolay Aleksandrovich, MEDVEDEV, Leonid Georgiyevich, PODZOLKIN, Nikolay Yakovlevich, SHAKHMEYSTER, Lev Grigor'yevich,; SPIVAKOVSKIY, A.O., prof., red.; KOLOMIYTSEV, A.D., red. izd-va,; PROZOROVSKAYA, V.L., tekhn. red.

[Over-all mechanization of underground transportation] Voprosy kompleksnoi mekhanizatsii podzemnogo transporta. Moskva, Ugletekhizdat, 1958. 195 p. (MIRA 11:11)

1. Chlen-korrespondent AN SSSR (for Spivakovskiy)
(Mine railroads)
(Coal-handling machinery)

LEYTES, Z. M.

AUTHOR: Leytes, Z.M., Engineer 118-58-3-8/21

TITLE: Ways Leading to the Technical Development of Undergound Transportation in Coal Mines (Puti razvitiya tekhniki podzemnogo transporta na ugol'nykh shakhtakh)

PERIODICAL: Mekhanizatsiya Trudoyëmkikh i Tyazhelykh Rabot, 1958, # 3, pp 22-26 (USSR)

ABSTRACT: In 1956, time studies showed that workstoppage in excavation and development of stopes was extremely high due to poor transportation means and badly organized loading points.

The following reasons for the inefficiency of the underground transportation is given. Of all electric locomotives, 22% are low-powered, 2-ton locomotives, 60% are contactor and battery-powered electric locomotives with an adhesion weight of 7-8 tons, 17% are 10-ton, and only 1% 14-ton electric locomotives. Three quarters of all tubs have a small holding capacity and tubs with automatic couplers have not as yet been introduced. Conveyors, the most effective transportation means are insufficiently used with only 17.8% of the all underground transportation being carried out in this way. Mainly used, are belt conveyors of the

Card 1/2

Ways Leading to the Technical Development of Underground Transportation in Coal Mines

LKU-250 type, with an output of 250 tons per hour. In 1957, the serial output of more powerful conveyors of the KRU-350 and KRU-260 types was started. The following recommendations are given to solve the problem of mining transportation: 1) a widespread introduction of powerful uninterrupted transportation means, such as conveyors or hydraulic devices, 2) more useful load and higher speed for underground trains, 3) smooth transport and 4) mechanization of all auxiliary transportation processes and introduction of automation and remote control.

There are 2 graphs.

AVAILABLE: Library of Congress

Card 2/2

LEYTES, Z.M., SYSOYEVA, V.A.

Field of efficient use of conveyer transportation in the extraction sector. Nauch. trudy MGI no. 20:38-44 '58. (MIRA 11:8)
(Mine haulage)
(Conveying machinery)

LEYTES, Z.M., starshiy nauchnyy sotrudnik

Development of underground transportation in 1959-1965. Ugol' 33 no.10: 49-52 O '58. (MIRA 11:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut.
(Mine railroads) (Conveying machinery) (Electricity in mining)

LEYTES, Z.M.

Conference on methods of determining the best capacity of shaft bottoms. Ugol' 33 no.11:45 N '58. (MIRA 11:11)
(Shaft sinking)

LEYTES, Z.M.

ALEKSANDROV, B.F., inzh.; BALYKOV, V.M., inzh.; BARANOVSKIY, F.I., inzh.; BOGUTSKIY, N.V., inzh.; BUN'KO, V.A., kand.tekhn.nauk, dotsent; VAVILOV, V.V., inzh.; VOLOTKOVSKIY, S.A., prof., doktor tekhn.nauk; GRIGOR'YEV, L.Ya., inzh.; GRIDIN, A.D., inzh.; ZARMAN, L.N., inzh.; KOVALEV, P.F., kand.tekhn.nauk; KUZNETSOV, B.A., kand.tekhn.nauk, dotsent; KUSNITSYN, G.I., inzh.; LATYSHEV, A.F., inzh.; LEYBOV, R.M., doktor tekhn.nauk, prof.; LEYTES, Z.M., inzh.; LISITSYN, A.A., inzh.; LOKHANIN, K.A., inzh.; LYUBIMOV, B.N., inzh.; MASHKEVICH, K.S., inzh.; MALKHAS'YAN, R.V.; MILOSERDIN, M.M., inzh.; MITNIK, V.B., kand.tekhn.nauk; MIKHEYEV, Yu.A., inzh.; PARAMONOV, V.I., inzh.; ROMANOVSKIY, Yu.G., inzh.; RUBINOVICH, Ye.Ye., inzh.; SAMOYLYUK, N.D., kand.tekhn.nauk; SMEKHOV, V.K., inzh.; SMOLDYREV, A.Ye., kand.tekhn.nauk; SNAGIN, V.T., inzh.; SNAGOVSKIY, Ye.S., kand.tekhn.nauk; FEYGIN, L.M., inzh.; FRENKEL', B.B., inzh.; FURMAN, A.A., inzh.; KHORIN, V.N., dotsent, kand.tekhn.nauk; CHETVEROV, B.M., inzh.; CHUGUNIKHIN, S.I., inzh.; SHELKOVNIKOV, V.N., inzh.; SHIRYAYEV, B.M., inzh.; SHISHKIN, N.F., kand.tekhn.nauk; SHPIL'BERG, I.L., inzh.; SHORIN, V.G., dotsent, kand.tekhn.nauk; SHTOKMAN, I.G., doktor tekhn.nauk; SHURIS, N.A., inzh.; TERPIGOREV, A.M., glavnyy red.; TOPCHIYEV, A.V., otv.red.toma; LIVSHITS, I.I., zamestitel' otv.red.; ABRAMOV, V.I., red.; LADYGIN, A.M., red.; MOROZOV, R.N., red.; OZERNOY, M.I., red.; SPIVAKOVSKIY, A.O., red.; FAYBISOVICH, I.L., red.; ARKHANGEL'SKIY, A.S., inzh., red.;

(Continued on next card)

ALEKSANDROV, B.F.---(continued) Card 2.

BELYAYEV, V.S., inzh.; red.; BUKHANOVA, L.I., inzh., red.; VLASOV, V.M., inzh., red.; GLADILIN, L.V., prof., doktor tekhn.nauk, red.; GREBTSOV, N.V., inzh., red.; GRECHISHKIN, F.G., inzh., red.; GONCHAREVICH, I.F., kand.tekhn.nauk, red.; GUDALOV, V.P., kand.tekhn. nauk, red.; IGNATOV, N.N., inzh., red.; LOMAKIN, S.M., dotsent, kand. tekhn.nauk, red.; MARTYNOV, M.V., dotsent, kand.tekhn.nauk, red.; POVOLOTSKIY, I.A., inzh., red.; SVETLICHNYY, P.L., inzh., red.;SAL'-TSEVICH, L.A., kand.tekhn.nauk, red.; SPERANTOV, A.V., kand.tekhn. nauk, red.; SHETLER, G.A., inzh., red.; ABARBARCHUK, F.I., red.izd-va; PROZOROVSKAYA, V.L., tekhn.red.; KONDRAT'YEVA, M.A., tekhn.red.

[Mining; an encyclopedic handbook] Gornoe delo; entsiklopedicheskii spravochnik. Glav.red.A.M.Terpigorev. Chleny glav.redaktsii A.I. Baranov i dr. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu. Vol.7. [Mining machinery] Gornye mashiny. Redkol.toma A.V.Topchiev i dr. 1959. 638 p. (Mining machinery) (MIRA 13:1)

BUCHNEV, V.K., prof., doktor tekhn. nauk; KALININ, R.A., dotsent; KORABLEV, A.A., kand. tekhn. nauk; MONIN, G.I., inzh.; BELYAYEV, V.S., kand. tekhn. nauk; MERKULOV, V.Ye., inzh.; ALEKSEYENKO, V.D., inzh.; IL'SHTEYN, A.M., kand. tekhn.nauk; GELESKUL, M.N., kand. tekhn.nauk; KOBISHCHANOV, M.A., kand. tekhn.nauk; DOBROVOL'SKIY, V.V., kand. tekhn. nauk; MALYSHEV, A.G., inzh.; VOROPAYEV, A.F., prof., doktor tekhn. nauk; LIDIN, G.D., prof., doktor tekhn.nauk; TOPCHIYEV, A.V., prof.; VEDERNIKOV, V.I., kand. tekhn.nauk; KUZ'MICH, I.A., kand. tekhn. nauk; LEYTES, Z.M., inzh.; SYSOYEVA, V.A., kand. tekhn. nauk; MELAMED, Z.M., kand. tekhn.nauk; CHERNAVKIN, N.N., inzh.; KARPILOVICH, M.Sh., inzh.; MEL'KUMOV, L.G., inzh.; BOGOPOL'SKIY, B.Kh., inzh.; FROLOV, A.G., doktor tekhn.nauk; KHVOSTOV, F.K., inzh.; BAGASHEV, M.K., kand. tekhn. nauk; KAMINSKIY, I.N., inzh.; PETROVICH, T.I., inzh.; ZHUKOV, V.V., red. izd-va; LOMILINA, L.N., tekhn. red.; PROZOROVSKAYA, V.L., tekhn. red.

[Mining engineers' handbook]Spravochnik gornogo inzhenera. Moskva, Gos.nauchno-tekhn. izd-vo lit-ry po gornomu delu, 1960. (MIRA 14:1)

(Mining engineering--Handbooks, manuals, etc.)

LEYTES, Z.M., starshiy nauchnyy sotrudnik

Labor used in underground transportation and ways to reduce it.
Ugol' 35 no.1:41-44 Ja '60. (MIRA 13:5)

1. Institut gornogo dela AN SSSR.
(Mine haulage)

LEYTES, Z. M., CAND TECH SCI, "METHODS OF ESTABLISHING THE TRAFFIC CAPACITY AND OPTIMAL STORAGE CAPACITIES OF THE [redacted] TRANSPORT SYSTEM IN COAL MINES." [redacted] (place not indicated)

1961. (MIN OF HIGHER AND SEC SPEC ED UKSSR, DNEPROPETROVSK ORDER OF LABOR RED BANNER MINING INST IM ARTEM).

(KL, 3-61, 217)

LEYTES, Z.M., kand.tekhn.nauk; SYSOYEVA, V.A., kand.tekhn.nauk

Technical and economic comparison of electric locomotives with storage batteries and diesel locomotives. Ugol' 36 no.12:45-48 D '61. (MIRA 14:12)

1. Institut gornogo dela im. A.A.Skochinskogo.
(Mine railroads)
(Locomotives)

LEYTES, Z.M., kand. tekhn. nauk

Variability of underground load traffic within shifts and some methods of determining it. Vop. rud. transp. no.5:133-149 '61. (MIRA 16:7)

1. Institut gornogo dela im. A.A. Skochinskogo.
(Coal—Transportation)

SYSOYEVA, V.A., kand. tekhn. nauk; LEYTES, Z.M., kand. tekhn. nauk

Analysis of the length and volume of transportation in underground haulage by electric locomotive. Vop. rud. transp. no.5: 210-226 '61. (MIRA 16:7)

1. Institut gornogo dela im. A.A. Skochinskogo.
(Mine haulage)
(Electric locomotives)

LEYTES, Z.M., kand. tekhn. nauk; SYSOYEVA, V.A., kand. tekhn. nauk; VAYNSHTEYN, I.A., kand. fiz.-matem. nauk

Establishing optimum flow-sheets for underground transportation with the help of graphic methods. Ugol' 38 no.8:53-57 Ag '63. (MIRA 17:11)

1. Institut gornogo dela im. A.A. Skochinskogo (for Leytes, Sysoyeva). 2. Moskovskiy gosudarstvennyy universitet (for Vaynshteyn).

LEYTES, Z.M., kand. tekhn. nauk; SYSOYEVA, V.A., kand. tekhn. nauk; CHERNENKO, Ye.B., inzh.

Cost parameters of underground transportation in mines working steeply pitching seams. Nauch. soob. IGD 26:21-32 '65. (MIRA 18:9)

LEYTES, Z.M., kand.tekhn.nauk; SYSOYEVA, V.A., kand.tekhn.nauk; GUDALOV, V.P., kand.tekhn.nauk; ANTONOVSKAYA, M.A., inzh.

Method of modeling underground transportation. Ugol' 40 no.9:35-38 S '65. (MIRA 18:10)

1. Institut gornogo dela im. A.A.Skochinskogo.

LEYTES, Z.S.

Seminar on filtration of juices and sirups of the sugar industry. (MIRA 15:1)
Sakh. prom. 35 no.11:4 N '61.
(Sugar manufacture--Equipment and supplies)

APLAVINA, T.M.; IVANOVA, R.M.; LEYTES, Z.S.; NOSOVA, M.V.; PODRECHNEVA, V.I.; KHITROVA, N.A.; SEDEL'NIKOV, V.I., red.; MAYOROV, V.V., tekhn. red.

[Pavillions of the food industry] Pavil'ony pishchevoi promyshlennosti; putevoditel'. Moskva, 1962. 74 p. (MIRA 16:6)

1. Moscow. Vystavka dostizheniy narodnogo khozyaystva SSSR. (Food industry--Exhibitions)

LETTEZEN, M. G.

LETTEZEN, M. G.

Ob izgibaiushchem udare raspredelinnoi nagruzkoi. Moskva, 193f. (TSAGI. Trudy, no. 351)

Title tr.: On the bending impact of distributed load.

NCF

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

LEYTEYZEN, L.G.; KHLEBNIKOV, N.S.

Feedback in photoelectron multipliers. Zhur.tekh.fiz. 25 no.5:943-944 My '55. (MLRA 8:7)
(Photoelectric multipliers)

LEYTEYZEN, L.G., BREYDO, I.YA., GLUKHOVSKOY, B.M.

"Commercial Types of Multistage Photo-Multiplier Tubes," by I. Ya. Breydo, B. M. Glukhovskoy, and L. G. Leyteyzen, Radiotekhnika i Elektronika, No 10, Oct 56, pp 1344-1356

This work presents recent data (10 Apr 56), on widely utilized commercial electron multiplier tubes in the Soviet Union in the fields of theoretical physics and technology.

Also discussed are methods for measuring the parameters of the tubes. Designations of the tubes described, and for which the parameters were tabulated, are as follows: FEU-17, FEU-18, FEU-19, FEU-20, FEU-22, and FEU-25.

LEYTEYZEN, L. G.

USSR/Nuclear Physics - Instruments and Installation Methods of Measurement and Investigation. C-2

Abs Jour : Referat Zhur - Fizika, No 1, 1958, 301

Author : Leyteyzen, L.G., Glukhovskoy, B.M., Breydo, I.Ya.
Inst :
Title : Photomultiplier for Scintillation Gamma Spectrometers.

Orig Pub : Kirstallografiya, 1957, 2, No 2, 290-293

Abstract : Description of the results of plant tests of a large number of selected samples of FEU-29 photomultipliers. The choice was made with a count of the amplitude resolution, sensitivity of photocathode, and linearity. The amplitude resolution, measured for a photomultiplier paired with a NaI (Tl) crystal, when irradiated by a Cs^{137} compound, amounts on the average approximately to 9%, while measurements with the aid of a pulse gas-discharge illuminator give a resolution $\sim$ 5.3% and show that the crystal is responsible for a considerable portion of the spread of the

Card 1/2

LEYTEYZEN, L. G. and BERKOVSKIY, A. G.

"

" Some Results on the Photo-electron Multipliers Suitable for the Discrimination of Short-Time Intervals"

A conference on Electron and Photo-electron Multipliers; Radiotekhnika i Elektronika, 1957, Vol. II, No. 12, pp. 1552 - 1557 (USSR)

Abst: A conference took place in Moscow during February 28 and March 6, 1957 and was attended by scientists and engineers from Moscow, Leningrad, Kiev and other centres of the Soviet Union. Altogether, 28 papers ;were read and discussed.

Leyteyzen, L. G.

48-12-15/15

AUTHORS: Leyteyzen, L. G. , Berkovskiy, A. G. , Breydo, I. Ya. , Glukhovskoy, B. M. , Korol'kova, O. S. , Tarasova, Ye. I.

TITLE: New Industrial Types of Photoelectron Multipliers (Novyye promyshlennyye tipy fotoelektronnykh umnozhiteley)

PERIODICAL: Izvestiya AN SSSR, Seriya Fizicheskaya, 1957, Vol. 21, Nr 12, pp. 1653 - 1659 (USSR)

ABSTRACT: At present the production and delivery of some new photoelectron--multipliers (FEV) worked out by the authors were begun on an industrial scale. They are shortly described here. 1.) The production of the special multiplier for the scintillation-spectrometers ФЭУ -29 was recently begun. It has a good amplitude-dissolving power which is guaranteed by the comparatively high sensitivity of the cathodes of the device. The integral sensitivity is higher than 30 μ A lm^{-1}, on the average 40 - 45 μ A lm^{-1}, the "blue" one is higher than 6 μ A ml^{-1} which corresponds to a quantum discharge of more than 9 % at $\lambda \approx$ 4000 Å. Besides the electron-optics at the entrance of the multiplier guarantees a good taking over of the electrons from the cathode to the dynode, as well as minimum losses in the first cascades. The amplitude of the noise, measured in relation to the photopeak of $Cs^{137} \rightarrow$ NaJ(Tl) on the 50

Card 1/4

New Industrial Types of Photoelectron Multipliers

impulse sec^{-1}-level, is not higher than 5 ÷ 8 keV. The light-characteristic is linear up to the amplitude of the initial impulse = = 7 - 8 V at a load of about 50 kΩ and a parasitic capacity of $\leqslant$ 10pF, with the method of operation given in the pass filter of the device. The most important operation-parameter of any FEV is the stability. Most of the ФЭУ -29 under the usual conditions in the gamma-spectrometers work sufficiently stable. Experiments with dynodes of different alloys are now made for improving the stability. At the same time the influence of technological factors and the construction of dynodes upon the stability of the FEV is also experimentally investigated.

2.)FEV with enlarged cathode. According to the preliminary data these multipliers have the following average static parameters: integral sensitivity of the cathode 35 - 40 μ A lm^{-1}, the "blue" sensitivity - 7 μ A lm^{-1}. Amplification about $(2 \div 5).10^5$ at full voltage of 1400 - 1500 V. At much higher voltages it can attain 10^7. The density of the heat flow from the cathode on the average amounts to 5.10^{-15} Acm^{-2}.

3.) "Time"-FEV. Beside the "general" parameters the minimum scattering according to the time of passage of the "electron-parcel" through the multiplier in the case of a maximum steep front of the initial impulse is also demanded of it. After the modelling of many

New Industrial Types of Photoelectron Multipliers

variants a system was found which guarantees good focusing of the electrons and minimum scattering of the time of flight. The calculations of the maximum time-of-flight gradient in this multiplier system with grid yielded a quantity of $4{,}4.10^{-10}$ sec (at a voltage of 100 V/cascade) which is 3 - 4 times less than in the multiplier-system H4646 (reference 3).

4.) The best ratio of the signal to the background in the wave-range of 5500 to 8000 Å is given by the bismuth-silver-cesium cathodes. The experimental samples of multipliers with such cathodes are produced in two sizes: that of the ФЭУ -29 and in a smaller size. The multipliers have 11 cascades. Their integral sensitivity of the cathodes on the average is 45 - 50 μ A lm^{-1}. The amplification is of the order of magnitude 10^5 - 10^6 at a full supply-voltage of 1400 - 1600 V. The smaller multiplier is distinguished by a great vibration-strength.

5.) The miniature-FEV. At present a construction was worked out for an eight-cascade-miniature-multiplier ФЭУ whose outside diameter is greater than 22,5 mm and whose height is 65 mm without peg. The flat, semi-transparent cathode of antimony-cesium has a working diameter of 18 mm. Its sensitivity is below 25 μ A lm^{-1}.

48-12-15/15

New Industrial Types of Photoelectron Multipliers

It guarantees an amplification up to 10^5 at a voltage of 900 - 100V. The dark currents are of the order of magnitude 10^{-8} A. There are 8 figures, and 3 references, 1 of which are Slavic.

AVAILABLE: Library of Congress

Card 4/4

LEYTEYZEM, L.G.

109-3-15/23

AUTHORS: Berkovskiy, A.G. and Leyteyzen, L.G.

TITLE: A Miniature Photo-electron Multiplier with a Bulky Cathode (Miniatyurnyy fotoelektronnyy umnozhitel' s massivnym katodom)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol.III, No.3, pp. 421-427 (USSR).

ABSTRACT: The multiplier is fitted with an antimony-caesium cathode, which is suitable for the operation with light beams having a diameter of about 2 mm. The emitters are also Sb-Cs-coated and are constructed in the shape of a box (see Fig.2a). There are 7 emitters and a special anode which is in the form of a grid, parallel to the surface of the last emitter (see Fig.2b). Dimensions of the multiplier are 58 mm in height and 22 mm in diameter. Overall sensitivity of the multiplier was measured at a light flux of 3×10^{-7} Lm and the sensitivity of the cathodes was investigated at 3×10^{-5} Lm, the diameter of the light beam being 2.15 mm in each case. Results of the measurements on 20 laboratory samples of the photo-multiplier are shown in Table 1 on p.423. It was found that the average cathode sensitivity was 28 μA/Lm. This was thought to be satisfactory for most practical applications. The average amplification of the photo multipliers was 10^5 at the overall

supply voltage of 900 V; the voltage per stage was thus 113 V and the amplification 5.2. If the overall voltage was 800 V, a total amplification was 5×10^4. Voltage current characteristics of the multipliers were also measured and two typical curves are shown in Fig.4; Curve M represents the overall amplification as a function of the inter-stage voltage, while Curve I_T represents the dark current as a function of the voltage. Noise and threshold sensitivity of the 20 samples were also measured and the results are reported in Table 2 on p.424; the threshold sensitivity, as a function of the voltage per stage, is shown in Fig.5. Anode characteristics of the multipliers for two different values of the output current are given in Fig.6. The construction of the multiplier is such that the anode current is dependent on the position of the light spot on the surface of the cathode. It was of interest, therefore, to investigate this effect. A beam having a diameter of 1.05 mm was used for the purpose and the sensitivity curves obtained by this means are shown in Fig.7. It is seen that the edge portions of the cathode have the highest sensitivity. This effect is thought to be due to the presence of two angles at the edges of the cathode. This was confirmed by the fact

A Miniature Photo-electron Multiplier with a Bulky Cathode

that, if an additional angle (threshold) was placed in the middle of the cathode, the sensitivity had an additional maximum in the centre of the cathode. On the basis of Figs. 7 and 8, it is concluded that the reason for the increased sensitivity of the cathode in the regions close to the angles is the focusing of the photo-electrons on to that portion of the first emitter which directs the highest possible number of the electrons on to the second emitter.
There are 9 figures, 2 tables and 5 references, 2 of which are Russian, 2 English and 1 German.

SUBMITTED: January 10, 1957

AVAILABLE: Library of Congress
Card 3/3

AUTHORS: Leyteyzen, L. G., Berkovskiy, A. G., Glukhovskoy, B. M., Korol'kova, O.S., Tarasova, Ye. I. 48-22-5-5/22

TITLE: On Some Characteristics of New Industrial Types of the FEU (Data From the VIIIth All-Union Conference on Cathode Electronics Leningrad, October 17-24, 1957)(O nekotorykh kharakteristikakh novykh promyshlennykh tipov FEU (Materialy VIII Vsesoyuznogo soveshchaniya po katodnoy elektronike, Leningrad, 17-24 oktyabrya 1957 g.))

PERIODICAL: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 1958 Vol. 22, Nr 5, pp. 513-517 (USSR)

ABSTRACT: In the years from 1956-1957 several types of multistage photo electronic multipliers (fotoelektronnyy umnozhitel' = FEU) were worked out and brought to the market. They find application in various fields of physical research. In this paper some data on this are given: 1) The main particularities of the new FEU types; They are given for the following types: a) 13-stage multiplier of the type FEU -29, b) multiplier of the type FEU -24. a) and b) are used in scintillation counters and spectrometers. c) multiplier type FEU -33 serves for the investigation of processes which are separated by extremely narrow intervals (10^{-9}–10^{-10} seconds). d) The domain of application of the multiplier

Card 1/2

On Some Characteristics of New Industrial Types of the FEU 48-22-5-5/22
(Data From the VIIIth All-Union Conference on Cathode Electronics, Leningrad, October 17-24, 1957)

with a cathode of bismuth-silver-cesium is determined by the particularities of its spectral characteristic (fig. 1). e) A miniature multiplier with a semitransparent cathode of antimony-cesium was worked out for the application in a portable device. f) A further multiplier with a massive antimony-cesium cathode has a lateral optical entrance (Ref 1). The types e) and f) are vibrationproof.
Finally the stability of the FEU is discussed, which was investigated by the authors. In the discussion of this abstract participated G. S. Vil'dgrube, and N. S. Khlebnikov. There are 4 figures, 1 table, and 1 reference, which is Soviet.

1. Electron multipliers--Properties 2. Electron multipliers --Applications

Card 2/2

SOV/48-22-8-18/20

AUTHORS: Berkovskiy, A. G., Leyteyzen, L. G., Pol'skiy, V. G.

TITLE: Industrial Photoelectronic Multipliers With an Improved Time Resolution and Strong Output Currents (Promyshlennyye fotoelektronnyye umnozhiteli s uluchshennym vremennym razresheniyem i bol'shimi vykhodnymi tokami)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol. 22, Nr 8, pp. 1002 - 1004 (USSR)

ABSTRACT: In the conference (Ref 1) last year preliminary data on the new 13-cascade multiplier (FEU =photoelectronic multiplier = FEM) were communicated. This device serves for the investigation of nuclear processes with a fast sequence. The investigations of the parameters and of the characteristics of the FEM-33 recently carried out by the authors yielded the following results: according to the technical assumptions the integral sensitivity of the cathodes of the FEM-33 as well as of the FEM-29 should not be below 30μA lm^{-1}. The mean integral sensitivity of the multiplier cathode which was developed in the last two months amounted to 40μA lm^{-1}. The dependence

Card 1/3

Industrial Photoelectronic Multipliers With an Improved Time Resolution and Strong Output Currents

of the amplification of the supply voltage of three specimens of the FEM-33 are given in figure 2 (continuous curves). For comparison the characteristics of three 14-cascade multipliers RCA-6810 are given with dotted lines. These curves were taken under the same conditions. Measurements of the amplitude resolution of the FEM-33 showed that it is by no means inferior to other FEM's. The noise level of the FEM-33 according to the scale of the NaJ-(Tl)-Cs^{137} is of the order 3 - 4 keV (at a counting rate of 50 pulses per sec). The classification of 50 specimens of FEM-33 according to the pulsed output current is given in figure 3. The weakest currents equaled 0,3 A, the highest about 1 A. Investigations of the linearity of the output currents at a voltage of the order of 4 kV showed that on the average the FEM-33 operate linearly up to 0,5 A. The deviations range from 0,4 to 0,8 A (Fig 8). The width of the coincidence curve of 2 specimens of FEM-33 with a crystal and with a preparation Co^{60} in the coincidence circuit is between the limits of 2 to 4 microcoulomb . sec (at a counting efficiency of 50%). The data obtained by oscillographs showed that the

Industrial Photoelectronic Multipliers With an Improved Time Resolution and Strong Output Currents

pulse rise times approximately equal from 2,5 to 3 microcoulomb.sec and their general resolution is somewhat above 10 microcoulomb.sec (Fig 5).
There are 5 figures and 1 reference, which is Soviet.

Card 3/3

SOV/48-22-8-19/20

AUTHORS: Berkovskiy, A. G., Breydo, I. Ya., Glukhovskiy, B. M., Korol'kova, O. S., Leyteyzen, L. G., Tarasova, Ye. I.

TITLE: Data Concerning Industrial Photoelectronic Multipliers for Scintillation Spectrometers (Novyye dannyye o promyshlennykh tipakh fotoelektronnykh umnozhiteley dlya stsintillyatsionnykh spektrometrov)

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya fizicheskaya, 1958, Vol.22, Nr 8, pp. 1005 - 1008 (USSR)

ABSTRACT: At the 7th All Union Conference on Nuclear Spectroscopy the basic features of new FEU (photoelectronic multiplier - FEM) types for spectrometry were communicated (Ref 1). In this paper the authors give new data on earlier developed FEM types, which are already in industrial production, and on new FEM's the development of which was terminated in 1957. In that year the mass production of the basic type of the spectrometers, the FEM-29 was started. As a result of the investigations, the types were arranged according to the voltages in the first cascades of the multipliers which guarantee a good amplitude

Card 1/3

Data Concerning Industrial Photoelectronic Multipliers for Scintillation Spectrometers

resolution. As the problem arose whether it would be possible to produce spectrometers FEM with a better resolution, it was attempted to produce spectrometers FEM with multialkali cathodes (as, for example Sb-Na-K- or Sb-Na-K-Ca cathodes) (In figure 3 the characteristics of these cathodes are given). The FEM-24 went into series production in the last year (Ref 1). The authors carried out experiments with good prospects with a multiplying system with torcidal dynodes of Al-Mg-alloys. One of the new types of midget spectrometers FEM is described as follows: cathode diameter 25 mm, maximum socket diameter 34,5 mm, length 110 mm. For practical operation the multiplier is equipped with a high-resistance potentiometer. From the table can be seen that the resolution of these multipliers is of the same order as that of FEM-29. The basic features of the design of the FEM-31 are given in reference 3. The spectrometric resolution of the FEM-31 which was measured with a crystal with a diameter of 14 mm was within the limits of 8,5 - 11%. An FEM with a large cathode (diameter 300 mm) was developed for work with liquid synthetic scintillators. (Antimony-cesium cathode

Data Concerning Industrial Photoelectronic Multipliers for Scintillation Spectrometers

with a sensitivity better than 20μ A lm^{-1}, multiplier sensitivity at 2400 V better than 10 A lm^{-1}, teroidal dynodes of AMg K alloy). An FEM with a bismuth-silver-cesium cathode was described in reference 3. These multipliers give a good amplification. The amplitude resolution of 10 specimens of FEM with NaJ-(Tl)-crystal with a diameter of 20 mm and with Cs^{137} was within the limits of 12 - 14%.
There are 5 figures, 1 table, and 3 references which are Soviet.

85863

S/048/59/023/012/008/009
B006/B060

9.6150 (3002, 3203)

AUTHORS: Berkovskiy, A. G., Breydo, I. Ya., Korol'kova, O. S., Leyteyzen, L. G.

TITLE: Some Characteristics of New Photoelectronic Multipliers

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol. 23, No. 12, pp. 1517 - 1519

TEXT: Two new types of photoelectronic multipliers ФЭУ-35 (FEU-35) and ФЭУ-29 (FEU-29), as applied to scintillation spectrometers, were worked out by the authors. Full particulars are given of FEU-35, less of FEU-29. The cathode diameter of FEU-35 is 25 and 34 mm for 108 mm length. To improve electron-optical properties of the input a focusing cylinder (cf. Fig.1) is applied. This cylinder permits better combination between the axial-symmetric inlet of the multiplier and the inevitably asymmetrical first cascade of the multiplier system. The new inlet system secures a good energy resolution. As much as 600 FEU-35 devices were checked for amplitude resolution (Fig.2) and for the amount of the energetic noise equivalent (Fig.3). Fig.4 illustrates the average

Card 1/3

Some Characteristics of New Photoelectronic Multipliers

amplification and the sensitivity of the multiplier as well as the dependence of the dark current on the supply voltage. The linear dependence of the output signal amplitude on the γ-quantum energy is secured up to amplitudes of the magnitude 10 v for 50 kΩ and 10 pF. The sensitivity threshold is about $(6-8)\cdot10^{-12}$ lm for a resonance amplifier band width of 20 cycles and for a resonance frequency of 80 cycles. The second multiplier (FEU-29) suitable for γ-spectrometry has a cathode with the dimensions 38·48·190 mm. Its amplitude resolution is given with 7.5 - 10%. It exhibits an especially low noise level (1 - 2 kev) in the 50 imp/sec level. To test the stability of the photoelectronic multipliers under work conditions a special device was constructed, permitting measurement of the change with time of the Cs^{137} photopeak level by means of a NaJ(Tl)-crystal. This device consisting mainly of a one-channel analyzer is described. Fig. 5 presents the photo of one part of the record chart of the photopeak amplitude stability of Cs^{137} for 4 FEU-29 multipliers. The horizontal multiplying factor was 0.4% of the pulse amplitude, the vertical one was 30 minutes. Displacement with

Card 2/3

Some Characteristics of New Photoelectronic Multipliers

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B006/B060

time of the averaged photopeak amplitude as well as variations of the amount of amplitude through an average value may be recorded by this method. The last mentioned effect was between 0.3 and 1%. There are 5 figures.

Card 3/3

LEY TEYZEN, L.G.

21594
9.6150 (1164/2705) S/109/60/005/010/017/031
21.5300 E033/E415

AUTHORS: Braydo, I.Ya., Glagolev, V.P., Glukhovskoy, B.M., Korol'kova, O.S. and Leyteyzen, L.G.

TITLE: Investigation of the Stability of Multi-Stage Photo-Electron Multipliers

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.10, pp.1698-1702

TEXT: This paper was presented at the 9th All-Union Conference on Cathode Electronics, Moscow, October 1959.

The stability of the output signal from a photo-electron multiplier depends on a number of factors: the voltage, the current, the time of operation and so on. The purpose of this article is to clarify the effects of these factors on multipliers with emitters of different materials. Since multipliers are widely used as scintillation counters, the multipliers were tested in a special set-up which approximated to operational conditions with crystals of NaJ(Tl) irradiated by Cs^{137} on the cathodes of the multipliers. Block diagrams of the test apparatus are given and the apparatus is described. The output current, which depends not only on the amplitude but also on the frequency of the

Card 1/4

Investigation of the Stability ...

pulses, i.e. on the intensity of irradiation of the crystal by γ-rays, was also monitored. The results show that there are two types of instability: 1) smooth change in the average value of the amplitude of the pulses over a period of time and 2) oscillation of the amplitude about a mean value, which shows as a scatter of the recorded points for a given curve. The deviation of the points is approximately 0.3 to 1% of the value of the output pulse. Early tests showed that the stability depended to a great extent on the previous history of the multiplier. The "settling-down" time is different for different specimens and for the same specimen the settling-down time on the first day can be very much longer than on following days. This "training effect" made investigation of individual specimens impossible and statistical tests on a number of multipliers were necessary. The results on 80 multipliers of the ФЭУ-35 (FEU-35) type with Sb-Cs cathodes and emitters are presented graphically by histograms of percentage change in pulse amplitude against numbers of multipliers for output currents of 0.1 to 2.5 microamps, 0.3 to 0.5 microamps and 0.55 to 6.0 microamps. The maxima of these distributions show

greater percentage change for larger currents. The results for 60 antimony-cesium cathode and emitter multipliers were similar. It is concluded that during the first hours of operation the stability is directly related to the output current and reduction in the current density improves the stability. The absolute maxima of the changes in the output current of the multipliers did not exceed published figures for multipliers with Al-Mg, silver-magnesium and antimony-cesium emitters. The settling-down time was found to be proportional to the output current. Tests on multipliers ФЭУ-24 (FEU-24) with aluminium-magnesium alloy emmiters showed that they also have appreciable settling-down time, but the output current has little effect on it, except that it is reduced with high currents. For example, a batch of multipliers with Al-Mg emitters and bismuth-silver-cesium cathodes had an average settling-down time of 10 to 20 min, after a rest-period of 12 hours with output currents of 20 to 30 microamps. To clarify the effect of activation by cesium on the stability of alloy emitters, a multiplier with a thermo-cathode was prepared. The stability of the emitter was checked directly in a vacuum with continuous pumping before and after cesiation. The relative

21594
S/109/60/005/010/017/031
Investigation of the Stability ... E033/E415

changes in the secondary emission coefficient for thermo-activation and for cesiation for one stage of a copper-beryllium alloy with 100 V and 0.3 mA output current are shown graphically. It is seen that the presence of cesium leads to an increase in both the settling-down time and also in the magnitude of the change in the secondary emission coefficient. There are 7 figures and 2 references: 1 Soviet and 1 non-Soviet.

SUBMITTED: December 21, 1959

Card 4/4

20426
S/109/60/005/012/024/035
E192/E582

9.4130 (3201, 2804, 1127, 2801)

AUTHORS: Leyteyzen, L.G., Glukhovskoy, B.M. and Tarasova, Ye. I.

TITLE: Simultaneous Activation of Various Photocathodes and Emitters in Photo-electron Multipliers

PERIODICAL: Radiotekhnika i elektronika, 1960, Vol.5, No.12, pp. 2038-2045

TEXT: A large number of photo-electron multipliers was analysed and the characteristics of their photocathodes were investigated. The photomultipliers were of the standard industrial or laboratory type. First the spectral characteristics of a number of multistage photo-electron multipliers with bismuth-silver-cesium cathodes and antimony-cesium emitters, as well as Al-Mg alloy emitters were investigated experimentally. Some of these are shown in Fig.1, where the wavelength is shown on the abscissa in microns. Some spectral characteristics of the multipliers with oxide-silver-cesium cathodes were also investigated and the results are given graphically. It is concluded that the shape of the characteristics of the tubes with antimony-cesium emitters is due to the strong adsorption of cesium by the emissive layer, so that a film of free

20426

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E192/E582

Simultaneous Activation of Various Photocathodes and Emitters in Photo-electron Multipliers

The secondary emission coefficient of the photomultipliers was investigated at a fixed voltage and it was found that it varied considerably from sample to sample, depending on its processing conditions. The average efficiency characteristics of the secondary-emission surfaces were also investigated. The efficiency coefficient is defined as the average gain of the multiplier per stage; this was obtained by measuring a large number of samples and determining the voltage and sensitivity distribution for the cathodes (I.Ya.Breydo et al., Ref.1). In general, the distribution curves have the form of the normal Gaussian distribution. The average gain coefficients per stage for a number of standard multipliers produced in 1959 with various emitters were investigated by the above method and the results are given in a figure, while the details of the multipliers are shown in a table. The same figure shows also the gain of some of the American tubes (made by RCA). From the experimental data given in the figures it is seen that for the same interstage voltages the gain of the multipliers with antimony-cesium emitters is much higher than that of the tubes with

Card 2/6

20426
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E192/E582

Simultaneous Activation of Various Photocathodes and Emitters in Photo-electron Multipliers

alloy-type emitters; the highest gain is obtained in the multipliers with a lateral optical input. The efficiency of various multiplier systems is approximately identical but the coefficient of the secondary emission as a function of voltage differs considerably. The effect of the presence of alkali metals on the secondary emission coefficient of alloy-type emitters was also investigated. According to N. Schaetti (Ref.3), M. Biermann and W. Krüger (Ref.4) and Ye. G. Kormakova and V. G. Pavlovskaya (Ref.5), the presence of cesium leads to an increase in the secondary emission coefficient σ. This effect was investigated for the Al-Mg emitters for the multipliers provided with a heated cathode. The overall gain of the multipliers was measured during various processing stages and the average gain was then calculated. The results of these measurements are given in Figs. 4 and 5. These show the gain per stage as a function of the interstage voltage; curves 1 and 2 in Fig.4 illustrate the effect of thermal activation, curves 1' and 2' represent the processing with K-Na, while curves 1" and 2" illustrate the influence of Cs processing. Curves 1,2 and 3 in Fig.5 show

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E192/E582

Simultaneous Activation of Various Photocathodes and Emitters in Photo-electron Multipliers

the gain after the thermal activation, while curves 1',2' and 3' illustrate the effect of Cs processing; in both figures the same emitters made of Al-Mg alloy were used. The dark current of the multipliers, which determines their sensitivity, was also investigated. It was found that the spread of this parameter, at a given sensitivity, in the standard commercial tubes was very considerable (several orders) and was much higher than the spread of other parameters. It was found that oxide-cesium cathodes give a constant thermal component of the dark current, which does not increase when the cathode is illuminated. On the other hand, an Sb-Cs cathode, operating with antimony-cesium emitters, has a very low thermal current. The multipliers with various other types of cathodes and with Al-Mg emitters give almost identical results as regards the thermal current. It is thought that the reason for the comparatively high dark currents in the multipliers with Sb-Cs cathodes and alloy-type emitters, as compared with other cathodes and emitters, is the luminescence of the alloy-type emitters.

S/109/60/005/012/024/035
E192/E582

Simultaneous Activation of Various Photocathodes and Emitters in Photo-electron Multipliers

There are 7 figures, 2 tables and 7 references: 3 Soviet and 4 non-Soviet.

SUBMITTED: December 21, 1959

Fig.1

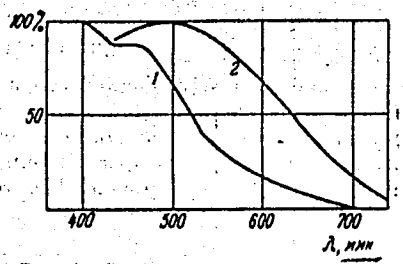


Рис. 1. Спектральные характеристики висмуто-серебряно-цезиевых катодов:
1 — с Sb — Ca-эмиттерами; 2 — с Al — Mg-эмиттерами

Card 5/6

S/048/62/026/011/007/021
B125/B102

9.4175

AUTHORS: Glukhovskoy, B. M., and Leyteyzen, L. G.

TITLE: Properties of the photoelectronic multipliers with many-alkaline photocathodes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 11, 1962, 1386 - 1389

TEXT: Some properties of the monocrystalline photoelectronic multipliers of type ФЭУ-38 (FEU-38) and ФЭУ-51 (FEU-51) with semi-transparent Sb-Na-K-Cs- photocathodes are described. The authors completed the development stage of these multipliers in 1961 and series production is now being planned. The FEU-51 multiplier for light measurements has a cathode of 25 mm diameter and 11 multiplying cascades. The basket-shaped emitters were produced from the activated БрБ-2 (BrB-2) alloy and activated before the multiplying system was mounted. The alkaline metals were prepared by heating tablets of the chromates of K, Na, Cs and of well purified powderized titanium (reducing agent). The logarithms of the sensitivities and the dark current increase almost linearly with the voltage. For FEU-38 this increase is steeper than for FEU-51. FEU-38 and FEU-51 are sensitive

Card 1/2

LEYTEYZEN, L.G.; GLUKHOVSKOY, B.M.

Parameters of new designs of commercial type photomultipliers.
Izv. AN SSSR. Ser. fiz. 28 no.1:115-117 Ja '64. (MIRA 17:1)

ACCESSION NR: AR4042178 S/0272/64/000/005/0182/0183

SOURCE: Ref. zh. Metrologiya i izmerit. tekhn. Otd. vy*p., Abs. 5.32.1170

AUTHOR: Leyteyzen, L. G.; Glukhovskiy, B. M.; Berkovskiy, A. G.

TITLE: Characteristics of new types of multistage photomultipliers for scintillation spectrometers

CITED SOURCE: Sb. Stsintillyatory* i stsintillyats. materialy*. Khar'kov, Khar'kovsk. un-t, 1963, 217-220

TOPIC TAGS: scintillation spectrometer, spectrometer, scintillation counter, photomultiplier, multistage photomultiplier

TRANSLATION: In 1960 there were developed new types of multistage photomultipliers, which will be used in scintillation counters and spectrometers. The main characteristic of the new types of photomultipliers is the wide wavelength interval in which their photocathodes are sensitive: antimony-cesium(FEU-37), antimony-cesium with quartz window (FEU-39), multi-alkali (FEU-38 and FEU-51). Spectral responses of these photomultipliers are given. Three illustrations. Bibliography: 1

SUB CODE: EM, OP ENCL: 00

Card 1/1

AFWL(t)/PAEM(a)/ESD(gs)/ESD(t) AT

ACCESSION NR: AP4045298 S/0048/64/028/009/1450/1453

AUTHOR: Leyteyzen, L. G.; Glukhovskoy, B. M.; Epshteyn, M. I.

TITLE: Investigation of the sensitivity thresholds of photomultipliers with different photocathodes for various spectral regions [Report, Tenth Conference on Cathode Electronics held in Kiev from 11 to 18 Nov 1963]

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 28, no. 9, 1964, 1450-1453

TOPIC TAGS: photomultiplier tube, photomultiplier characteristic, photocathode

ABSTRACT: For a number of applications of photomultipliers it is essential to know the spectral sensitivity threshold and peak sensitivity region of the tubes. Accordingly, the absolute values of the sensitivity threshold wavelengths of photomultipliers with Sb-Cs, Ag-O-Cs, Bi-Ag-O-Cs, Sb-K-Na-Cs and Sb-K-Na photocathodes, which represent the five basic types of photocathodes, were determined. The measurements were carried out on a special setup for this purpose,

L 14373-65
ACCESSION NR: AP4045298

using interference light filters, for each of which the exact transmission curve was first obtained. The measurement results are presented in the form of curves characterizing the variation of the spectral sensitivity threshold with wavelength and the absolute spectral sensitivity with wavelength for each type of photocathode. The regions of peak spectral sensitivity do not coincide with the regions of optimum sensitivity. The characteristics of Ag-O-Cs photocathodes are distinctive. The test data should be helpful in selecting photo-multipliers for specific applications. Orig. art. has: 1 formula and 3 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00

SUB CODE: EC NO REF SOV: 000 OTHER: 000

Card 2/2

L 25071-65 EWT(l)/EWT(m)/EPA(w)-2/EEC(b)-2/EWA(m)-2/EWA(h) Pab-10/Pt-10/
Peb IJP(c)

ACCESSION NR: AR4045741 S/0275/64/000/007/A034/A034

40
B

SOURCE: Ref. zh. Elektronika i yeye primeneniye. Svodny*y tom, Abs. 7A190

AUTHOR: Leyteyzen, L. G.; Glukhovskoy, B. M.; Berkovskiy, A. G.

25

TITLE: Characteristics of new types of multistage multiplier phototubes intended for scintillation spectrometers

19

CITED SOURCE: Sb. Stsintillyatory* i stsintillyats. materialy*. Khar'kov, Khar'kovsk. un-t, 1963, 217-220

TOPIC TAGS: multiplier phototube / FEU-28, FEU-32, FEU-37, FEU-38, FEU-39, FEU-51 photomultipliers

TRANSLATION: Fundamental parameters and characteristics are presented of these industrial multiplier phototubes developed in 1960 and covering the 170— 1,200-nm wavelength band: FEU-28, FEU-32, FEU-37, FEU-38, FEU-39, and FEU-51. Bibliography: 1 title.

SUB CODE: EC ENCL: 00

Card 1/1

L 4864-66 EWT(l)/EWA(h)

ACC NR: AP5027046 SOURCE CODE: UR/0120/65/000/005/0247/0248

AUTHORS: Leyteyzen, L. G.; Mel'nikova, K. M.

ORG: Moscow Electric Light Factory (Moskovskiy elektrolampovyy zavod)

TITLE: Heat resistant photomultiplier tube

SOURCE: Pribory i tekhnika eksperimenta, no. 5, 1965, 247-248

TOPIC TAGS: photomultiplier tube, temperature characteristic / FEU 66 photomultiplier tube

ABSTRACT: The characteristics of the heat-resistant FEU-66 photomultiplier tube (PMT) are presented as a function of temperature up to 120C. The PMT has a translucent end-window photocathode whose spectral characteristics are the same as those of the translucent antimony-cesium cathode. The cathode sensitivity is in the range of 25—40 μamp/lum, and the energy equivalent of the inherent noise is 1.5—2.5 kev. The PMT characteristics plotted as a function of temperature up to 120C are inherent resolution, output signal amplitude, energy equivalent of the

Card 1/2

UDC: 621.383.292

Card 2/2

LEYTEYZEN, M.G.; BELETSKIY, M.S.

Deep desiliconizing of aluminate solutions in the presence of lime. TSvet. met. 36 no.9:49-53 S '63. (MIRA 16:10)

BERSHTAM, N.S., inzh.; LEYTGOL'D, A.E., inzh.

The VO-10 vibrator for sinking and extracting casings. Gidr. i stroi. 30 no.5:50-51 My '60. (MIRA 14:5)
(Vibrators)
(Oil well drilling)

LEYTEYZEN, M.O.; KONTOROVICH, N.M.

Two-stage calcination of aluminate solutions. Tsvet. met. 34 no.12:49-54 D '61. (MIRA 14:12)

(Alumina)

BORODASHKIN, A.A., inzh.; TOMASHEVICH, V.N., inzh.; LEYTIN, G.S., red.; GEORGIYEVA, G.I., tekhn.red.

[Flexible metal shafts, hoses, and sheaths; catalog-handbook] Metallicheskie gibkie valy, rukava i pletenki; katalog spravochnik. Moskva, 1958. 64 p. (MIRA 13:3)

1. Russia (1923- U.S.S.R.) TSentral'noye byuro tekhnicheskoy informatsii Vniistroydormasha.
(Shafting) (Hose) (Cables)

SINYAGOVSKIY, I.S.; TROFIMOV, G.S.; KOZLOV, A.M., kand. tekhn. nauk, retsenzent; LEYTIN, G.S., inzh., red.; SOKOLOVA, T.F., tekhn. red.

[Thin-walled bent profiles in the manufacture of agricultural machinery; fundamentals for the design of efficient forms] Tonkostennye gnutye profili v sel'skokhoziaistvennom mashinostroenii; osnovy proektirovaniia ratsional'nykh form. Moskva, Mashgiz, 1963. 199 p. (MIRA 16:8)

(Agricultural machinery--Design and construction)

YEFIMOV, V.F., inzh.; IVANOV, A.A., inzh.; LEYTIN, G.S., inzh.; PAVLOVA, Ye.S., inzh.; TSALIT, O.N., inzh.; ZHOGOLEV, V.S., inzh.

[Road and building machinery and mechanized building tools; catalog-reference book] Stroitel'nye i dorozhnye mashiny i mekhanizirovannyi stroitel'nyi instrument; katalog-spravochnik. Moskva, TSentr.biuro tekhn.informatsii Vniistroidormasha, 1958. 471 p. (MIRA 13:3)

1. Russia (1917- R.S.F.S.R.) Gosudarstvennaya planovaya komissiya Rosglavtyazhmashsnabsbyt. 2. TSentral'noye byuro tekhnicheskoy informatsii Vsesoyuznogo nauchno-issledovatel'skogo instituta stroitel'nogo i dorozhnogo mashinostroyeniya (TsBTI VNIIStroydormash)(for all).

(Building machinery) (Road machinery)

5 (4)

05826
SOV/76-33-10-24/45

AUTHORS: Poltorak, V. A., Leytis, L. Ya., Voyevodskiy, V. V.

TITLE: On the Part Played by the Surface in Thermal Propane Decomposition

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2259 - 2263 (USSR)

ABSTRACT: The fact that thermal decomposition is never completely inhibited by various inhibitors is ascribed by Hinshelwood (Ref 1) to the two parallel mechanisms of decomposition, namely, the chain mechanism (inhibited by the inhibitor) and the molecular mechanism (which is not inhibited at all). This assumption is, however, irreconcilable with experimental results obtained from the cracking of hydrocarbons in the presence of deuterium-bearing molecules. Hinshelwood et al. (Ref 9) found that the rate of thermal decomposition of 2-methyl pentane was independent of a variation in the ratio S:V (S = surface of the reaction vessel, V = its volume). Rice and Herzfeld (Ref 10) have, however, shown that the absence of any dependence of the reaction rate on the ratio S:V is not indicative of the homogeneity of a chain formation or destruction. Since the hypothesis of a homogenepus

Card 1/3

mechanism of chain formation or destruction could not explain experimental observations, V. V. Voyevodskiy and V. A. Poltorak (Ref 11) assumed that the formation and destruction of the chains be heterogeneous processes and the observations are to be attributed to variations in the surface of the reaction vessel. Consequently, they suggested a definite course of this process. In order to check this hypothesis, the authors investigated systematically the influence exerted by the ratio S:V on the kinetics of propane cracking. Further, they examined the possibility of intoxicating or activating the vessel surface. The reaction rate was determined from the pressure rise (measured by means of a diaphragm gauge) at a propane pressure of 25 torr and a temperature of 610 C. For this purpose, they used a quartz tube with and without content (twelve-fold variation of the S:V value). When the S:V value was increased by twelve times, the reaction rate dropped to one-fourth. Experimental pretreatment of the vessel surface with various salt solutions indicated that an $Mg(ClO_4)_2$ solution increases the reaction rate (Fig 4). Intoxication of the reaction vessel by pretreatment with a mixture

On the Part Played by the Surface in Thermal Propane Decomposition

05826
SOV/76-33-10-24/45

of NO + H_2S indicates that at the beginning the reaction proceeds like an inhibited reaction, is then accelerated and finally passes through a maximum (Fig 3). In order to explain the problem as to whether the afore-mentioned hypothesis is correct, or whether the influence exerted by the surface of the reaction vessel upon the thermal decomposition should be explained in another way, further investigations are needed. There are 4 figures and 12 references, 4 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: March 25, 1958

Card 3/3

KHOTSYANOV, Lev Kipriyanovich, prof.; LEYTIS, Ruvim Grigor'yevich [deceased]; MARTSINKOVSKIY, Boris Izrailevich [deceased]; ROZANOV, L.S., red.; ZAKHAROVA, A.I., tekhn.red.

[Industrial hygiene] Gigiena truda. Pod red. L.K.Khotsianova. Moskva, Gos.izd-vo med.lit-ry, 1958. 474 p. (MIRA 12:3)

1. Chlen-korrespondent AMN SSSR (for Khotsyanov).
(INDUSTRIAL HYGIENE)

LEITKIN, V.E.

LEITKIN, V.E. Steel smelting in electric furnaces. Izd. 2., dop. i perer. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1951. (Mic 55-3572)
Collation of the original, as determined from the film: 427. 1 p.
Microfilm Slavic 408 AC

LEYTMAN, A., tekhnolog; KOKINA, L., tekhnolog

Rapid coaling of "Bol'shaia Volga"-type motorboats in the Rostov harbor. Rech. transp. 19 no.11:43-44 N '60. (MIRA 13:11)

1. Rostovskiy port.
(Rostov—Harbors)
(Coaling—Equipment and supplies)

LEYTMAN, B.

Awarding pensions on preferential terms and in preferential amounts according to the law on government pensions. Sots. trud 5 no.6:142-145 Je '60. (MIRA 13:11)

(Pensions)

TITOV, M.; LEYTMAN, B.

Technological progress in the chemical industry and material incentives. Sots. trud 8 no.12:61-64 D '63. (MIRA 17:2)

1. Nachal'nik otdela truda i zarabotnoy platy Gosudarstvennogo komiteta khimicheskoy i neftyanoy promyshlennosti (for Titov). 2. Nachal'nik laboratorii Gosudarstvennogo instituta azotnoy promyshlennosti (for Leytman).

LEYTMAN, B.M.

NAZIROV, R.K.; MELIK-TANGIYEV, Z.I.; LEYTMAN, B.M.

Achievements of petroleum construction workers on the 40th Anniversary of the Great October Revolution. Azerb.neft.khoz. 36 no.11:39-40 N '57. (MIRA 11:2)
(Azerbaijan--Construction industry)

S/191/62/000/011/001/019
B101/B186

AUTHORS: Kirillova, E. I., Matveyeva, Ye. N., Leytman, K. A., Fratkina, G. P.

TITLE: Aging of polystyrene materials. Photoaging of styrene - acrylonitrile copolymer, and its stabilization against ultraviolet radiation

PERIODICAL: Plasticheskiye massy, no. 11, 1962, 3-6

TEXT: Films of polystyrene (PS) and of its copolymers CH-10 (SN-10) and CH-28 (SN-28) containing 10 and 28% polyacrylonitrile, respectively, were irradiated with ultraviolet light from a mercury lamp (λ = 2483-5770 Å; Q = 0.0152 cal/cm^2·min) at 25-30°C. The film thickness was 50-100 μ, the molecular weight 118,000-194,000, the time of irradiation about 400 hrs. The amount of the resulting insoluble fraction and the intrinsic viscosity $[\eta]$ of the soluble fraction were determined. Results: (1) The amount of insoluble fraction rose with increasing acrylonitrile content, and even more so after reprecipitation. (2) Molecular weight and $[\eta]$ dropped rapidly within the first 50 hrs, and

Card 1/3

Aging of polystyrene materials. ...

approached a constant value after 200 hrs. The content of acrylonitrile did not affect the course of these curves. Samples of high molecular weight were destroyed faster than samples of low molecular weight. (3) After 400 hrs irradiation, the content of peroxide compounds was 0.06% in PS and 0.08% in SN-28. (4) The spectra of the irradiated PS films showed a formation of carbonyl groups (1700 cm^{-1} band); further, a weak band appeared at ~3400 cm^{-1} (OH groups), and a broad one at 1100-1300 cm^{-1}. In SN-28, a 1720 cm^{-1} band was observed which may due to aldehydes, ketones, or aromatic ethers. (5) Formation of volatile products was not observed after 60 hrs irradiation at 60-70°C. Here, the oxygen content in PS increased from 0.2 to 2%. Addition of 0.5 mole% of benzoyl peroxide increased the degree of destruction to the 6-8fold without any change in the spectra. An attempt was then made to stabilize SN-28 by adding substances having an absorption maximum at 300-400 mμ. Results: (a) 0.5 mole% admixtures of β-naphthyl salicylate, disalicylidene ethylene diamine, its copper salt, 4-propene oxide-2,4-dihydroxy benzophenone, 2,4-dibenzoyl resorcinol, a reaction product of anisole acetone with o-cresol, proved to be weak inhibitors. The effect of 0.5 mole% of 2-hydroxy-4-methoxy benzophenone, as well as that of the

Card 2/3

ACCESSION NR: AP4018158 S/0191/64/000/003/0010/0013

AUTHORS: Kirillova, E.I.; Matveyeva, Ye.N.; Leytman, K.A.; Fratkina, G.P.

TITLE: Relative light stability of polystyrene polymers

SOURCE: Plasticheskiye massy*, no.3, 1964, 10-13

TOPIC TAGS: polystyrene, light stability, styrene acenaphthylene copolymer, styrene methylstyrene copolymer, styrene vinylnaphthalene copolymer, polymonochlorostyrene, polydichlorostyrene, oxidation intensity, copolymer film oxidation, photodecomposition, photopolymerization

ABSTRACT: The photodecomposition of styrene copolymers with acenaphthylene, alpha-methylstyrene, beta-vinylnaphthalene, polymonochlorostyrene and polydichlorostyrene was investigated. The stability of the following polymers against destruction at 27C occured in the following decreasing order: styrene-beta-vinylnaphthalene copolymer, styrene-alpha-methylstyrene copolymer, polystyrene, styrene-acenaphthylene copolymer, polydichlorostyrene, and polymonochlorostyrene, the least stable. Polydichlorostyrene, the styrene-acenaphthylene and the styrene-alphamethylstyrene copolymers do not polymerize further on

Card 1/2

ACCESSION NR: AP4018158

photo-aging. Polymerization does play a basic role in the photo-aging of styrene-beta-vinylnaphthalene copolymer and of polymonochlorostyrene. The intensity of oxidation of these polymers, as determined by the formation of the carbinol absorption band at 1720 cm^{-1} in the IR spectra, increases rapidly in the first 25 hours with temperature increase from 27 to 62C; thereafter the oxidation increases less noticeably, but after 200 hours it is still somewhat higher at the higher temperature. The intensity of the following polymers to oxidation at 62C decreases in the following order: styrene-acenaphthylene copolymer, styrene-beta-vinylnaphthalene copolymer, polymonochlorostyrene, styrene-alpha-methylstyrene copolymer and polydichlorostyrene, the most stable. Styrene copolymer films are oxidized on the surface only to a thickness of about 20 microns. Orig. art. has: 8 figures, 1 table and 2 formulas

ASSOCIATION: None

SUBMITTED: 00 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: PH, MA NR REF SOV: 002 OTHER: 004

Card 2/2

L 2272-66 EWT(m)/EPF(c)/EWP(j)/T/ETC(m) WW/RM

ACCESSION NR: AP5022228 UR/0191/65/000/009/0055/0059
678.746.019.391.01:543.42

AUTHOR: Fratkina, G. P.; Kirillova, E. I.; Giagoleva, Yu. A.; Leytman, K. A.

TITLE: Study of the thermal and light aging of certain polystyrene plastics by means of infrared spectroscopy

SOURCE: Plasticheskiye massy, no. 9, 1965, 55-59

TOPIC TAGS: polystyrene, light aging, thermal aging

ABSTRACT: The aging of polyvinyltoluene and impact-resistant block polystyrene was studied on films 50-100 μ thick. Infrared spectra of the decomposition products were used for their identification. A comparison of the thermal and light aging of the two compounds studied, which differ in the presence of one CH_3 group at the para position in the benzene ring of polyvinyltoluene, points up a marked difference in their behavior: (1) during the aging of polystyrene, the main process taking place is the destruction of the chains, whereas during the aging of polyvinyltoluene, the process is cross-linking, and (2) the main oxidation products of polystyrene are aromatic ketones, whereas the oxidation of polyvinyltoluene produces chiefly aromatic aldehydes. Chemical mechanisms

Card 1/2

L 2272-66

ACCESSION NR: AP5022228 0

are proposed to explain both types of these types of behavior. Orig. art. has: 9 figures.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT, OP

NO REF SOV: 005 OTHER: 004

Card 2/2 OP

KIRILLOVA, E.I.; MATVEYEVA, Ye.N.; ZAVITAYEVA, L.D.; GIAGOLEVA, Yu.A.; LEYTMEN, K.A.; FRATKINA, G.P.

Studying the physicomechanical properties of shock-resistant polystyrenes during aging. Plast. massy no.2:43-45 '66. (MIRA 19:2)

L 20799-66 EWA(h)/EWP(j)/EWT(m)/T/EWA(1) IJP(c) RM

ACC NR: AP6005953 (A) SOURCE CODE: UR/0191/66/000/002/0043/0045

AUTHORS: Kirillova, E. I.; Matveyeva, Ye. N.; Zavitayeva, L. D.; Glagoleva, Yu. A.; Leytman, K. A.; Fratkina, G. P.

ORG: none

TITLE: A study of the physicomechanical properties of impact-resistant polystyrenes during aging

SOURCE: Plasticheskiye massy, no. 2, 1966, 43-45

TOPIC TAGS: polystyrene, light aging, thermal aging, impact strength, elongation, hydroxyl group, polymer/ UP-1 polystyrene, UPP-2 polystyrene, PS-SU polystyrene, SNP-2 polystyrene

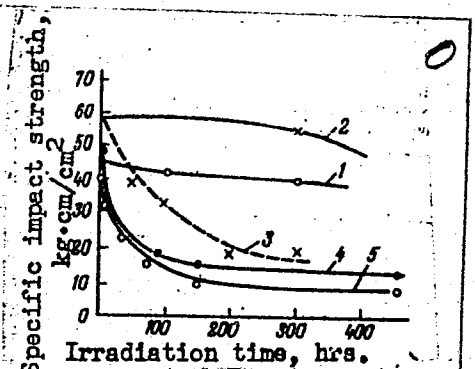
ABSTRACT: The changes in the physicomechanical properties of impact-resistant polystyrenes UP-1, UPP-2, PS-SU$_2$, PS-SU$_3$, and SNP-2 during thermal, light, and atmospheric aging are studied. Accelerated light aging was done under a PRK-4 lamp. Thermal aging was done in a thermostat at 60C with sampling every 500, 1000, 2000, and 3000 hrs. Light aging greatly changed the specific impact strength and somewhat changed the specific elongation (see Fig. 1).

Card 1/3 UDC: 678.746.22--13:678.029.72:0.1:539.3

L 20799-66

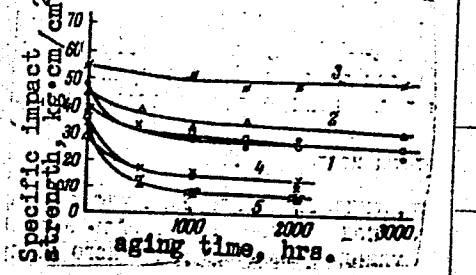
ACC NR: AP6005953

Fig. 1. Change in specific impact strength with irradiation: 1 and 2 - SNP; 3 - SNP (irradiation at 50-60C); 4 - UPP-2 with TiO_2 filler; 5 - UPP-2 without filler.



The SNP-2 was practically unchanged by thermal aging, while the other polystyrenes were affected more (see Fig. 2).

Fig. 2. Change in specific impact strength with prolonged heat aging at 60C; 1 - UPP-2 without filler; 2 - UP-1; 3 - SNP; 4 - PS-SU_3; 5 - PS-SU_2.



Card 2/3

L 20799-66

ACC NR: AP6005953

Ultraviolet rays and increased temperatures affect polystyrenes by reducing the specific impact strength and specific elongation and lead to the formation of carbonyl and hydroxyl groups with a simultaneous decrease in the number of double bonds. The study of aging of impact-resistant polystyrenes is being continued. Orig. art. has: 10 graphs.

SUB CODE: 11 / SUBM DATE: none/ ORIG REF: 001/ OTH REF: 006

Card 3/3

AUTHORS: Leytman, L. D. and Freyman, A. V. SOV/138-59-2-11 24

TITLE: Manufacture of Hosepipe Without Using Mandrels (Izgotovleniye rukavov bezdornovym sposobom)

PERIODICAL: Kauchuk i rezina, 1959, Nr 2, pp 38-40 (USSR)

ABSTRACT: This technique enables hoses of any length to be produced, whereas those wound on mandrels are usually limited to 20 metres. The layout of the plant is shown in a diagram. The rubber mix is fed into a screw extruder to produce a tube which is then cooled. The extruded tube is taken through two braiding machines with intermediate impregnation and drying. The braided pipe, after being coated with a rubber cement, is given an outer covering of rubber applied by a bevelled head screw extruder. The pipe is then cooled and the outer covering is perforated so that the air in the braid can be vented before the next stage. This stage involves sheathing the pipe temporarily with lead. Before the lead is applied the pipe is dusted, preferably with graphite, to prevent adhesion of the lead to the outer rubber covering. The temporary lead sheath with a wall

Card 1/3

thickness of 2 to 2.2 mm is extruded at a temperature in the upper part of the bevelled head of 160° to 180°C and in the lower part at a temperature of 170° to 230°C. The internal diameter of the lead sheath must be 1.5 to 2 mm less than the external diameter of the covered pipe. Before vulcanization the sheathed pipe is filled with water at 85° to 95°C and 8 to 10 atm. pressure, and its ends are sealed. The sheathed pipe, filled with water, is rolled onto a drum carried on a trolley and put into a vulcanizing chamber. On conclusion of vulcanizing the lead sheathing is stripped and re-used. Particular points mentioned are: the necessity for accurate tension control of the braided threads (at about 500 g), lay up of the braid at 3° to 5° less than the optimum angle of 54°44' since the pitch of the first braid will increase 5 to 8 mm during subsequent operation. Introduction of a supplementary pull through roll between the two braiding machines, and another after the second braid is applied, were found essential. Separate speed control of the braiding

 machines and accurate synchronization at all stages is

Manufacture of Hosepipe Without Using Mandrels

necessary to prevent over-stretching of the inner rubber tube. During the braiding and impregnating stages the internal pressure in the tube, which plays the part of a soft mandrel, should be between 0.10 and 0.15 atm. Less pressure leads to reduction in diameter of the hose during braiding, over pressure leads to swellings and porosity. The internal pressure can be raised to 4 atm. while the outer rubber cover is applied. At the present time two plants are in operation producing pneumatic tubing 18 mm internal diameter for working pressure of 10 atm, and a third plant for 9 mm diameter pipe. The cost of the mandrelless process is not at present less than by the normal method, but it is expected that with further improvement of the process this will be reduced. There is one figure.

ASSOCIATION: Kazanskiy zavod rezino-tekhnicheskikh izdeliy (Kazan' Technical Rubber Products Factory)

LEYTMAN, L.D.; GAYDAYENKO, A.G.

Pneumatic-tube transportation of carbon black at the Kazan Factory of Rubber Goods for Engineering Uses. Kauch.i rez. 19 no.10:51-55 O '60. (MIRA 13:10)

1. Kazanskiy zavod rezino-tekhnicheskikh izdeliy.
(Kazan—Carbon black)
(Pneumatic-tube transportation)

KOZLOV, L.M.; KHANNANOV, T.M.; SAFIN, R.R.; LEYTMAN, L.D.; FATKHUTDINOVA, Sh.G.

Plasticization of rubber compounds with nitroparaffins and their derivatives. Trudy KKHTI no.30:101-108 '62. (MIRA 16:10)

KORSHAKOVA, A.S.; BOLDYREV, T.Ye.; ALEKSANYAN, A.B.; SHATROV, I.I.; LEYTMAN, L.V.; FROLOV, V.I.; SEMINA, N.A.; DEVOYNO, L.V.; SIZINTSEVA, V.P.; BATURINA, L.M.; ABAKAROV, U.A.; GRINAVTSEVA, V.P.; MEDZHIDOV, V.; KORSHUNOVA, N.A.

Studies on the reactogenic properties of Gamaleia IEM polyvaccine. Zhur.mikrobiol.,epid.i immun. 30 no.11:37-41 N '59. (MIRA 13:3)

1. Iz Instituta epidemiologii i mikrobiologii imeni Gamalei AMN SSSR.
(DYSENTERY BACILLARY immunol.)
(TYPHOID immunol.)
(PARATYPHOID FEVERS immunol.)
(TETANUS immunol.)
(VACCINATION)